PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference ILIFF.015VPC	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/US01/04907	International filing date *(day/month/year)* 14 February 2001 (14.02.2001)	Priority date *(day/month/year)* 14 February 2000 (14.02.2000)
International Patent Classification (IPC) or national classification and IPC IPC(7): A61B 5/00 and US Cl.: 600/300		
Applicant FIRST OPINION CORPORATION		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

   [X] This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 13 sheets.

3. This report contains indications relating to the following items:

CORRECTED VERSION

- I [X] Basis of the report
- II [ ] Priority
- III [ ] Non-establishment of report with regard to novelty, inventive step and industrial applicability
- IV [ ] Lack of unity of invention
- V [X] Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI [ ] Certain documents cited
- VII [ ] Certain defects in the international application
- VIII [ ] Certain observations on the international application

Date of submission of the demand	Date of completion of this report
13 September 2001 (13.09.2001)	16 May 2003 (16.05.2003)
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer Max Hindenburg Telephone No. (703) 306-5648

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US01/04907

I. Basis of the report

1. With regard to the **elements** of the international application:*

☒ the international application as originally filed.

☒ the description:
pages 1-25, 27, and 29-70 as originally filed
pages NONE, filed with the demand
pages 26 and 28, filed with the letter of 18 October 2002 (18.10.2002)

☒ the claims:
pages NONE, as originally filed
pages NONE, as amended (together with any statement) under Article 19
pages NONE, filed with the demand
pages 71-80, filed with the letter of 18 October 2002 (18.10.2002)

☒ the drawings:
pages 1-37, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

☐ the sequence listing part of the description:
pages NONE, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination(under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in printed form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

☒ the description, pages NONE

☒ the claims, Nos. NONE

☒ the drawings, sheets/~~fig~~ NONE

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

** Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*
*** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US01/04907

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. STATEMENT

Novelty (N)	Claims 1-78	YES
	Claims NONE	NO
Inventive Step (IS)	Claims 1-78	YES
	Claims NONE	NO
Industrial Applicability (IA)	Claims 1-78	YES
	Claims NONE	NO

2. CITATIONS AND EXPLANATIONS

Claims 1-78 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest a first disease object and a second disease object having at least one corresponding symptom object and alternative symptom weight is applied to a diagnostic score.

---------- NEW CITATIONS ----------

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
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PCT

COMMUNICATION IN CASES FOR WHICH NO OTHER FORM IS APPLICABLE

	Date of Mailing (*day/month/year*)
Applicant's or agent's file reference ILIFF.015VPC	**REPLY DUE** see paragraph 1 below
International application No. PCT/US01/04907	International filing date (*day/month/year*) 14 February 2001 (14.02.2001)
Applicant FIRST OPINION CORPORATION	

1. ☐ REPLY DUE within ____ months/~~days~~ from the above date of mailing

   ☒ NO REPLY DUE

2. COMMUNICATION:

The International Preliminary Examination Report (IPER), Form PCT/IPEA/409, mailed 05 March 2003 did not take into consideration the response to the Written Opinion that was filed 18 October 2002. The original response has not made it to the file. However, applicant has supplied a copy of the response with proof in the form of a return post card receipt that bears a PCT/PTO date stamp of 18 October 2002 to show that the response was filed and in a timely fashion. Accordingly, the IPER mailed 05 March 2003 is hereby vacated in favor of the concurrently mailed new IPER.

Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Andres Kashnikow Telephone No. (703) 308-0858

Form PCT/IPEA/424 (January 1994)

the patient has already been asked about any alternative symptom S2, S3, or S4, the system will not ask the patient again, but will accept the alternative symptom and its weight. If the system is not in the alternative symptom mode, when the system seeks the value of specified symptom S1, it will proceed to ask the questions associated with symptom S1.

The Alternative Symptom feature eliminates redundant questioning of the patient and permits the author to group symptoms together that have the same impact on his disease. The Alternative Symptom feature lets the author control how she or he wants to focus on symptom details, i.e., on the quantization of symptoms. For high-level diagnosis, a high level of quantization may be sufficient; at a later time, the author may need more precise details, such as to distinguish between close variants of a disease.

In one embodiment, the system symptom database may contain several thousand symptom script elements, written independently by several hundreds of authors. Many of these symptoms may be the same, or be acceptably similar variations of each other. Without Alternative Symptoms, the system would load all candidate diseases. In the course of running them, the engine might encounter some of these similar symptoms several times. The effect would be to ask the patient the same question in many different ways, which would be inefficient and would not engender confidence. But with the Alternative Symptom feature, after the system evaluates any one of the alternative symptoms, the other symptoms in the set will not be asked.

A benefit of the object-based system having Symptom Objects and using the Alternative Symptom feature is that Symptom Objects and their underlying objects, e.g., Valuator Objects, Question Objects and Node Objects, can be "reused". In one embodiment, the author of a new disease script can reuse previously written and debugged objects by a few steps, which may include, for example, renaming one or more of the objects and assigning alternative weights. This object reuse capability permits faster coding, testing and release of new disease scripts.

F. Disease Timeline

In one embodiment of the invention, the Disease Timeline may be a chart or graph that describes how each symptom of the disease manifests itself over time in a typical patient. The timeline is a characteristic "pattern" of the disease that can be used as a reference for comparisons of the patient's actual symptom time chart.

This aspect of the invention relates to pure medical knowledge about a disease; it is independent of any one patient. This aspect is "theoretical", in contrast to a Symptom Time Chart, which relates to the "actual" symptom values as experienced by a patient over time.

The timeline is for a generic occurrence of the disease, to serve as a base reference. It can be scaled to fit a given patient.

At design time, the author of a disease object describes the typical course of the disease in terms of how and when its symptoms typically arise (onset), vary, and subside (offset) over time. This timeline starts with the First Significant Symptom (FSS) of the disease, and all timings are based on the start of the FSS. Note that the FSS may be different than the patient's chief complaint.

One embodiment utilizes a Gantt chart that records the times of the appearance, disappearance, overlap, and other aspects of the component symptoms. Initially, the author might only choose three time points for each symptom; later, more and more points can be added. A typical goal is an hour-by-hour description of the disease.

At run time, the system matches the patient to the script. Appendicitis may be used as an example disease to walk through a simple diagnosis. Assume that the author has chosen to describe the disease as follows: The first symptom is often (though not always) anorexia, so this symptom is the origin for the timeline. Anorexia, then, occurs at 0 hour. At hour 1, one typically expects nausea. At hour 3, one expects epigastric pain to become noticeable to the patient. By hour 8, one can expect the pain to be migrating to the right lower quadrant of the abdomen, and so on.

At run time, when a patient enters the system, the system preferably asks when the chief complaint started. In one embodiment, the system then selects the script that is nearest in time. So, here is a patient with appendicitis calling the diagnostic system; she or he may, of course, be at any stage along the disease timeline. Usually an appendicitis patient waits until she or he has abdominal pain before seeing a doctor. So, let's say our patient presents abdominal pain of a given severity as the chief complaint.

The system (in HAI mode) then searches all candidate scripts for abdominal pain of our patient's severity. It finds the appendicitis script, which indicates where a patient with that severity should be placed along the time line. The disease object can now compute the time offset required to match the patient, and can "place" or "match" the patient to that point in time in the appendicitis script.

Sooner or later, the LB system will let the appendicitis script ask another symptom. The script will ask the patient about earlier nausea or anorexia, and - if the patient confirms - will add weight to the score of appendicitis. At some point, the rising score will trigger the system to switch to VAI mode, and to ask about several more symptoms from the appendicitis script. This may rapidly pile on more weight, and the appendicitis diagnosis would then exceed threshold and would be ruled in. If not, the system will know what symptoms should appear next, and let the patient know.

The chart, graph or timeline described above may also be referred to as a predetermined template of symptom characteristics. One or more of the established symptoms may have symptom characteristics that arise (onset) or subside (offset) over time so as to match the predetermined template. If so, additional weight is added to the score for the particular disease. Furthermore, if the onset or offset characteristics match the predetermined template and a set of the established symptoms occur in a specified sequence over time, still more additional weight is added to the score for the particular disease. Thus, it can be seen that when certain symptom conditions are met, the score of a particular disease may rapidly reach the disease threshold and be ruled-in or diagnosed.

A disease needs time to "declare itself." On one hand, the longer one waits in a disease process, the more certain they can be of the diagnosis; on the other hand, one wants to make the diagnosis as soon as possible to begin appropriate treatment.

The author actually has two "clocks". One clock is related to the appearance of the Chief Complaint, the other clock is related to the appearance of the First Significant Symptom. The HAI mode uses the CC clock, while the VAI mode uses the FSS clock, which is more accurate, but cannot be used until one has a tentative diagnosis.

See Figure 28 for an exemplary screen shot of a user interface for specifying the order of a particular set of symptoms so as to establish the First Significant Symptom. The user may for example, slide symptom bars along the time axis to indicate their particular symptom history. The user would then click on the "submit" button which causes the new symptom occurrence times to be captured and then evaluated by the system.

The author can also use the symptom timeline as a characteristic pattern of symptom magnitudes. This is useful in describing and differentiating diseases based on their symptom patterns.

G. **Spectrum of Terms / PQRST Code**

In one embodiment of the invention, the PQRST Code is a comprehensive method for capturing and encoding a patient's verbal description of a symptom. It is particularly suitable for highly subjective symptoms that are hard to quantify, such as the patient's overall health, the characterization of a particular pain, or the expression of a mental state or emotion. The key invention here relates to the "Vocabulary of Diagnosis." This refers to the ability of the LB method to let an expert author use the exact vocabulary she or he has developed over years of experience in questioning the patient. In the real world, certain words used by patients to describe pain are classic indicators of specific disease. In the LB world, this is implemented by letting the patient select from a pick list of words that are then associated with a predetermined diagnostic

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WHAT IS CLAIMED IS:

1. A system for automatically diagnosing a disease, comprising:

a first disease object associated with a set of first disease symptom objects, at least one first disease symptom object having an actual symptom weight; and

a second disease object associated with a set of second disease symptom objects, at least one second disease symptom object corresponding to the at least one first disease symptom object and having an alternative symptom weight, wherein the alternative symptom weight is applied to a diagnostic score so as to automatically diagnose the disease.

2. A method of automated medical diagnosis of a patient, comprising:

providing at least a first symptom element having a first symptom weight;

retrieving an alternative weight for the first symptom; and

applying the retrieved alternative weight to a diagnostic score so as to automatically diagnose a medical condition.

3. A method of automated medical diagnosis of a patient, the method comprising:

a) selecting a disease applicable to the patient;

b) selecting a symptom associated with the selected disease;

c) automatically determining, for the selected disease, if the selected symptom has an alternative symptom that has already been evaluated;

d) applying a diagnostic weight of the alternative symptom to a diagnostic score associated with the selected disease; and

e) automatically determining if a diagnosis of the disease has been reached based on the diagnostic score after application of the weight.

4. The method of Claim 3, wherein the diagnostic weight is a function of a value corresponding to the alternative symptom.

5. The method of Claim 4, wherein evaluating the alternative symptom comprises determining the value of the symptom.

6. The method of Claim 3, additionally comprising repeating b) through e) until a termination condition is reached for the selected disease.

7. The method of Claim 6, further comprising:

determining if there is an additional disease applicable to the patient; and

repeating a) through e) until a termination condition is reached for the additional disease.

8. The method of Claim 3, additionally comprising enabling an alternative symptom mode wherein use of alternative symptoms is permitted.

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9. The method of Claim 3, additionally comprising applying a diagnostic weight of the selected symptom to the diagnostic score of the selected disease if the selected symptom does not have an alternative symptom that has already been evaluated.

10. The method of Claim 9, wherein the diagnostic weight is a function of a value corresponding to the selected symptom.

11. The method of Claim 10, additionally comprising evaluating the selected symptom so as to determine the value of the symptom.

12. The method of Claim 3, additionally comprising disabling an alternative symptom mode wherein use of alternative symptoms is not permitted.

13. The method of Claim 3, additionally comprising applying a diagnostic weight of the selected symptom to the diagnostic score of the selected disease if alternative symptoms are not permitted.

14. A system for automated medical diagnosis of a patient, comprising:

means for providing at least a first symptom having a first symptom weight;

means for retrieving an alternative weight for the first symptom; and

means for applying the retrieved alternative weight to a diagnostic score so as to automatically diagnose a medical condition.

15. A computerized medical diagnostic method, comprising:

a) repetitively asking questions to elicit responses from a patient, the responses establishing a current symptom, the established current symptom contributing a weight to at least one disease;

b) determining one or more synergistic weights based on the current symptom established and any prior symptoms established;

c) adding the established symptom weight and the synergistic weight(s) to a total score for each disease in which the current symptom applies, wherein the adding is performed in unison for the applicable diseases; and

d) determining whether the total score for a particular disease reaches or passes a threshold so as to declare a diagnosis.

16. The method defined in Claim 15, wherein determining synergistic weights includes establishing a synergistic symptom.

17. The method defined in Claim 16, wherein the synergistic symptom is based on a type of an onset or an offset of a one of the established symptoms.

18. The method defined in Claim 16, wherein the synergistic symptom is based on an onset slope or an offset slope of a one of the established symptoms.

19. The method defined in Claim 16, wherein the synergistic symptom is based on an onset trend or an offset trend of a one of the established symptoms.

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20. The method defined in Claim 15, wherein a selected set of established symptoms occurring in a specified sequence over time lends an extra diagnostic weight to the disease.

21. The method defined in Claim 15, wherein one or more of the established symptoms having onset or offset characteristics matching a predefined template of symptom characteristics lends an extra diagnostic weight to the disease.

22. The method defined in Claim 15, wherein a selected set of established symptoms occurring in a specified sequence over time and having onset or offset characteristics matching a predefined template of symptom characteristics lends an extra diagnostic weight to the disease.

23. The method defined in Claim 15, additionally comprising repeating a)-d) for a different symptom.

24. A computerized diagnostic method, comprising the steps of:

repetitively asking questions over time to elicit responses from a patient, the responses establishing time varying symptoms, each established symptom contributing a weight to a disease;

generating one or more synergistic weights based on the symptoms established over time;

accumulating established symptom weights and synergistic weights for the disease; and

determining whether the accumulated weights for the disease reach or pass a threshold so as to declare a diagnosis.

25. The method defined in Claim 24, wherein generating synergistic weights includes establishing a synergistic symptom.

26. The method defined in Claim 24, wherein the time varying symptoms are stored in a patient medical record.

27. A computerized medical diagnosis method, comprising:

a) defining a spectrum of terms representative of a subjective description for an aspect of a medical symptom;

b) presenting the spectrum of terms to a patient during a diagnosis session;

c) selecting a term from among the spectrum of terms;

d) repeating a)-c) for other aspects of the medical symptom;

e) encoding the selected terms into a health data code; and

f) indexing a database of diseases with the health data code thereby diagnosing a disease.

28. A computerized medical diagnosis method, comprising:

a) defining a spectrum of terms representative of a subjective description for an aspect of a medical symptom;

b) defining diagnostic weights for each term of the spectrum;

c) presenting the spectrum of terms to a patient during a diagnosis session;

d) selecting a term from among the spectrum of terms;

e) corresponding the selected term to a weight;

f) applying the weight corresponding to the selected term to a diagnostic score so as to diagnose a medical condition;

g) repeating the acts a) - d) for other aspects of the medical symptom so as to select other terms; and

h) encoding the selected terms into a code.

29. The method defined in Claim 28, additionally comprising:

repeating the acts a) - e) at a predetermined later time;

analyzing a change of the code over time; and

assigning a weight for a change in the medical symptom over time.

30. A method of automated medical diagnosis of a patient, the method comprising:

providing a first medical symptom element, the first medical symptom element having an actual symptom weight for a first disease and an alternative symptom weight for a second disease;

providing a second medical symptom element, the second medical symptom element having an actual symptom weight for the second disease;

applying the actual weight for the first medical symptom element to a first diagnostic score and the alternative weight to a second diagnostic score, wherein the first diagnostic score is associated with the first disease and the second diagnostic score is associated with the second disease; and

continuing diagnostic scoring by applying actual symptom weights for the second disease to the second diagnostic score.

31. The method defined in Claim 30, wherein the first symptom element establishes the presence of a medical symptom.

32. The method defined in Claim 30, wherein the first symptom element establishes the value of a medical symptom.

33. The method defined in Claim 30, wherein the actual symptom weight for the second medical symptom element may be different than the alternative symptom weight for the first medical symptom element.

34. The method defined in Claim 30, wherein the second medical symptom element is related to the first medical symptom element.

35. The method defined in Claim 30, wherein the first symptom element is associated with one or more preferred questions and the second symptom element is associated with one or more alternative questions.

36. A computerized diagnostic method of a patient, the method comprising:

a) providing to a computer a list of diseases, each disease associated with a list of symptoms;

either the following two features:

b) automatically selecting a one of the symptoms to be a focus symptom based on a predetermined criteria; and

c) evaluating the focus symptom to establish the focus symptom, the established symptom contributing a weight to diseases having the established symptom;

or the following two features:

d) automatically selecting a one of the symptoms to be a focus symptom from the list of symptoms associated with a selected one of the diseases; and

e) evaluating the focus symptom to establish the focus symptom, the established symptom contributing a weight to at least the selected disease having the established symptom; and

f) selectively repeating b) and c) or d) and e) until accumulated weights for a disease reach or pass a threshold so as to declare a diagnosis.

37. The method defined in Claim 36, wherein each symptom is associated with one or more questions, formulas, or logic structures.

38. The method defined in Claim 36, wherein the predetermined criteria includes a prevalence of the symptoms in the diseases.

39. The method defined in Claim 36, wherein one of the diseases is selected when a condition is satisfied, and wherein the selectively repeating continues with d) and e).

40. The method defined in Claim 39, wherein the condition comprises a preselected percentage of a disease threshold.

41. The method defined in Claim 39, wherein the condition comprises a diagnostic momentum of the accumulated weights for a disease.

42. The method defined in Claim 39, wherein the condition comprises a particular response by the patient.

43. A computerized method for diagnosing the medical problem of a patient, the method comprising:

a) providing to a computer a list of diseases, each disease being associated with a list of symptoms;

b) selecting, in a first mode, a subset of diseases having shared symptoms from the list of diseases;

c) evaluating at least one of the shared symptoms;

d) switching from the first mode to a second mode based on the evaluating of the shared symptoms, wherein a particular disease is selected;

e) selecting, in the second mode, symptoms associated with the particular disease;

f) evaluating at least one of the selected symptoms of the particular disease; and

g) diagnosing the medical problem of a patient based on the evaluating of the shared symptoms and the selected symptoms.

44. The method defined in Claim 43, wherein the switching occurs when a criteria is met based on the evaluating of the shared symptoms.

45. The method defined in Claim 44, wherein the criteria is based on an external request by a user.

46. The method defined in Claim 44, wherein the criteria is based on a diagnostic score from the evaluating of the shared symptoms.

47. The method defined in Claim 44, wherein the criteria is based on a diagnostic momentum from the evaluating of the shared symptoms.

48. The method defined in Claim 44, wherein the criteria is based on a probability of diagnosis.

49. A method of automated diagnosis including a computer, comprising:

asking a patient questions;

receiving answers from the patient;

using the answers to select a subset of possible diseases based on a chief complaint;

determining a first significant symptom of the patient; and

diagnosing a disease by asking questions associated with the symptoms of a selected disease, wherein the selected disease includes the first significant symptom.

50. The method defined in Claim 49, wherein the chief complaint is different than the first significant symptom.

51. A method of automatically diagnosing a medical condition by use of a predicted timeline of symptoms, the method comprising:

generating a plurality of timelines which are each representative of a typical course of a disease in terms of how and when the symptoms of the disease typically arise, vary, and subside over time;

automatically asking one or more questions of a patient so as to elicit a symptom indicative of a chief complaint;

automatically receiving answers from the patient in response to the questions;

automatically identifying a disease corresponding to the chief complaint;

correlating the chief complaint to a timeline for the disease;

automatically asking one or more questions to elicit the presence and time of a first significant symptom on the timeline for the disease;

adding an incremental weight to a cumulative score for the disease if the first significant symptom is established; and

establishing the diagnosis when the cumulative score exceeds a predetermined threshold.

52. The method defined in Claim 51, wherein the chief complaint includes a symptom and a severity for the symptom.

53. The method defined in Claim 51, wherein each disease is associated with one timeline.

54. A method of automatically diagnosing a medical condition by use of a predicted timeline of symptoms, the method comprising :

generating a plurality of timelines which are each representative of a typical course of a disease via a characteristic pattern of symptom magnitudes over time; and

automatically selecting a particular disease based on a pattern of symptom magnitudes associated with a patient being similar to the timeline associated with the particular disease.

55. The method defined in Claim 54, wherein each disease is associated with one timeline.

56. The method defined in Claim 54, additionally comprising automatically asking questions of the patient.

57. The method defined in Claim 56, additionally comprising creating a timeline of symptom magnitudes indicative of the patient based on answers to the questions.

58. A method of automatically diagnosing a medical condition by use of a predicted timeline of symptoms, the method comprising :

generating a plurality of timelines which are each representative of a typical course of a disease via a characteristic pattern of symptom magnitudes over time;

automatically asking questions of a patient, wherein the questions relate to patient symptoms;

receiving answers indicative of a plurality of symptom magnitudes from the patient; and

automatically selecting a particular disease based on a pattern of symptom magnitudes associated with the patient being similar to the timeline associated with the particular disease.

59. The method defined in Claim 58, additionally comprising creating a timeline of symptom magnitudes indicative of the patient based on answers to the questions.

60. A computerized diagnostic system utilizing a predicted timeline of symptoms, the system comprising:

a computerized device;

a database, in data communication with the computerized device, having a plurality of timelines which are each representative of a typical course of a disease via a characteristic pattern of symptom magnitudes over time; and

a diagnosis program executing on the computerized device, the program configured to:

automatically ask one or more questions of a patient so as to elicit a symptom indicative of a chief complaint,

automatically receive answers from the patient in response to the questions,

automatically identify a disease corresponding to the chief complaint,

correlate the chief complaint to a one of the plurality of timelines for the identified disease,

automatically ask one or more questions to elicit the presence and time of a first significant symptom on the timeline for the identified disease,

add an incremental weight to a cumulative score for the disease if the first significant symptom is established, and

establish the diagnosis when the cumulative score exceeds a predetermined threshold.

61. The system defined in Claim 60, wherein the chief complaint includes a symptom and a severity for the symptom.

62. The method defined in Claim 60, wherein each disease is associated with one timeline.

63. A system for automatically diagnosing a medical condition by use of a predicted timeline of symptoms, the system comprising:

means for generating a plurality of timelines which are each representative of a typical course of a disease in terms of how and when the symptoms of the disease typically arise, vary, and subside over time;

means for automatically asking one or more questions of a patient so as to elicit a symptom indicative of a chief complaint;

means for automatically receiving answers from the patient in response to the questions;

means for automatically identifying a disease corresponding to the chief complaint;

means for correlating the chief complaint to a timeline for the disease;

means for automatically asking one or more questions to elicit the presence and time of a first significant symptom on the timeline for the disease;

means for adding an incremental weight to a cumulative score for the disease if the first significant symptom is established; and

means for establishing the diagnosis when the cumulative score exceeds a predetermined threshold.

64. The system defined in Claim 63, wherein the chief complaint includes a symptom and a severity for the symptom.

65. The system defined in Claim 63, wherein each disease is associated with one timeline.

66. A computer usable medium having computer readable program code embodied therein for automatically diagnosing a medical condition by use of a predicted timeline of symptoms, the computer readable code comprising instructions for:

accessing a plurality of timelines which are each representative of a typical course of a disease via a characteristic pattern of symptom magnitudes over time; and

automatically selecting a particular disease based on a pattern of symptom magnitudes associated with a patient being similar to the timeline associated with the particular disease.

67. The computer usable medium of Claim 66, wherein each disease is associated with one timeline.

68. The computer usable medium of Claim 66, additionally comprising instructions for automatically asking questions of the patient.

69. The computer usable medium of Claim 68, additionally comprising instructions for creating a timeline of symptom magnitudes indicative of the patient based on answers to the questions.

70. A method of reuse of medical script objects used in the automated diagnosis or management of a medical condition, the method comprising:

providing a plurality of disease objects, each disease object associated with a plurality of symptom objects; and

assigning a weight for each symptom, wherein a particular disease object may include a preferred weight for one or more preferred symptoms and an alternative weight for one or more alternative symptoms, wherein the alternative symptoms are selected from a set of archived symptom objects that are available for reuse.

71. The method defined in Claim 66, additionally comprising assigning a new name for a symptom object that is reused.

72. The method defined in Claim 66, wherein the set of archived symptom objects is stored in a database.

73. The method defined in Claim 68, additionally comprising accessing the set of archived symptom objects stored in the database via a global computer network.

74. The method defined in Claim 66, wherein each symptom object has underlying objects used to establish the symptom.

75. An object based automated diagnostic system comprising a plurality of objects which interact to determine the diagnosis of a patient, wherein the objects includes at least one of: a disease object, a symptom object, a valuator object, a question object, a node object and a candidates object.

76. The system of Claim 71, wherein the objects include a plurality of disease objects and a plurality of symptom objects.

77. The system of Claim 71, additionally comprising an engine object to coordinate the other objects.

78. An object based automated diagnostic system comprising a plurality of objects, wherein the objects include at least a plurality of disease objects and a plurality of symptom objects, and wherein at least some of the objects perform their own tasks and call upon other objects to perform their tasks at the appropriate time.